

# Emergency Remote Teaching and Online Exams at the National and Kapodistrian University of Athens during the COVID-19 Pandemic

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## Abstract

The outbreak of COVID-19 pandemic has caused a great disruption in higher education worldwide. Traditional face to face teaching had to change suddenly and in an unplanned way in emergency remote teaching, a temporary shift of instructional delivery to an alternate delivery mode due to crisis circumstances. This paper presents the transition to emergency remote teaching at the National and Kapodistrian University of Athens during the COVID-19 pandemic and explores the challenges and the opportunities in several aspects, technological, pedagogical, organizational, individual and social, based on lessons learned.

**Keywords:** Higher education; emergency remote teaching; technological challenges; pedagogical challenges; social challenges; open eclass platform; nkua; covid-19;

## 1 Introduction

The coronavirus (COVID-19) was declared as a global pandemic on March 2020 and social distancing was adopted in many countries to contain the problem. Ministries of education in numerous countries around the world recommended or made mandatory the shift to an online education model in order to prevent the spread of the virus. In this unprecedented situation Higher Education Institutions had to decide about how to continue teaching and learning while keeping their faculty, staff, and students safe. Many institutions opted to cancel all face-to-face classes, including labs and other learning experiences, and asked faculty members to move their courses online.

Normally, moving instruction online can enable the flexibility of teaching and learning anywhere, anytime, but the speed with which this move to online instruction was expected to happen was unprecedented and challenging. Although specialized support personnel was available to help faculty members to implement online courses, in this situation, these individuals and teams were not able to offer the same level of support to all faculty in such a narrow preparation window.

What we know from research is that typical planning, preparation, and development time for a fully online university course is six to nine months before the course is delivered. In contrast to experiences that are planned from the beginning and designed to be online, emergency remote teaching (ERT) is a temporary shift of instructional delivery to an alternate delivery mode due to crisis circumstances. It involves the use of fully remote teaching solutions for education that would otherwise be delivered face-to-face. The primary objective in these circumstances is not to re-create a robust educational ecosystem but rather to provide temporary access to instruction in a manner that is quick to set up and is reliably available.

In this paper we present how the National and Kapodistrian University of Athens (NKUA) has dealt with the challenges of shifting into emergency remote teaching (ERT) during COVID-19 pandemic.

## 2 The case of National and Kapodistrian University of Athens

The National and Kapodistrian University of Athens (NKUA) is a research University that has attained recognition as an Institution of educational and scientific excellence. It is the largest state institution of higher education in Greece, and among the largest universities in Europe. According to the «Top Universities by Top Google Scholar Citations» rankings by Webometrics, the National and Kapodistrian University of Athens is ranked 41st in the world, 10th in Europe. It offers a wide range of study areas; 68,500 students are currently enrolled in 43 undergraduate and 200 postgraduate programs leading to a Master's or Doctoral degree.

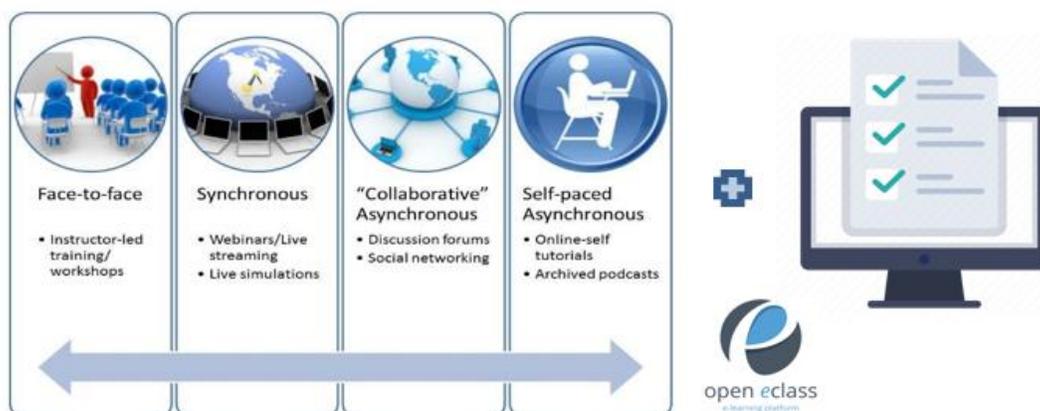
National and Kapodistrian University of Athens (NKUA) had adopted technology into educational process for more than 15 years. An e-learning ecosystem of online tools and resources is supported based mainly on open software and open technologies like Learning Management System (Open eClass), Video on Demand and Video Streaming platform (Open Delos), Teleconferencing tools (BBB, Webex, Zoom), Survey platform (Lime Survey), Collaboration platform (Synergasia) and other digital tools for teaching and learning. In addition specialized personnel is available to help faculty members to implement and support online courses.

However on March 2020 COVID-19 pandemic crisis caused a massive disruption in the way NKUA was functioning and delivering its courses. The approach that was followed for a rapid shift from the traditional face to face teaching in emergency remote teaching (ERT) was based on previous experiences and the established infrastructure in order to meet new needs in a short period of time. The solution was communicated to faculty members and staff through a remote-teach guidelines website and a series of webinars.

NKUA's e-learning ecosystem served as a basis for supporting emergency remote teaching. Technological infrastructures were evaluated and technically strengthened with greater computing capabilities in order to cope with the new increased demands. User logins on the LMS system reached an increase of 300% on daily basis and user visits increase dramatically raised to 500%.

NKUA's specialized support personnel prepared and presented to faculty members different scenarios in a series of webinars how to create and deliver online courses in a fast and easy way. IT groups undertook in shifts the obligation to monitor the services and immediately intervene when a technical problem occurred. The helpdesk service also extended the operating hours from 8am to 8pm in order to better support the online educational process.

Regarding the pedagogical approach, educational process was divided into two parallel processes the asynchronous communication and learning process and the synchronous remote teaching process. The asynchronous communication and learning process was supported by NKUA's Learning Management System (Open eClass), an open source learning management system (LMS) designed and developed in-house that provides an effective platform for online learning, used by the two thirds of the higher education institutions in Greece, all public schools and countless more educational organizations. Open eclass is an easy to use, secure and flexible platform that helps educators to create online courses and support all instructional scenarios like blended learning, distance education, flipped classroom, asynchronous collaborative learning, self-paced learning, etc. Open eclass was the core platform for sharing online learning materials, communication and collaboration with students. In addition new features for online evaluation and assessment were incorporated into Open eClass platform.



**Figure 1.** Transition to emergency remote teaching

The synchronous remote teaching process was supported by the Video Streaming platform (Open Delos) and the Teleconferencing tools (BBB, Webex, Zoom and Google Meet). These services were integrated with Open eClass platform and NKUA's identity service in order to give personalized access to both faculty members and students through online courses. There were three scenarios supported based of the size of the audience of each course. For online courses with more than 300 participants (large audience) the proposed remote teaching scenario was based on video streaming service (one-way communication) through open Delos platform. Faculty members were able to stream their lectures either from their home PC or from a properly equipped university classroom with IP camera, microphone installation, multimedia pc and large screens. Communication with students was supported by using the online chat tool into their online open eclass course. For online courses with 50 to 300 participants (medium audience) the proposed remote teaching scenario was based on Teleconferencing tools (Webex, Zoom and Google Meet – cloud platforms) where application sharing and two-way video and audio communication with students was supported. For online courses with less than 50 participants (small audience), the proposed remote teaching scenario was based on Teleconferencing tool (BBB – on premises platform) where application sharing and two-way video and audio communication with students was supported.

In addition learning assessment was one of the most important aspects of the online courses. Different courses had different forms of evaluation and different approaches. The learning assessments during the semester were including assignments, quizzes, projects, presentations and workshops. However the need to support online final exams for the first time, was one of the biggest challenges.

NKUA's specialized support personnel prepared and presented to faculty members three different scenarios for online exams based on Open eClass assessment tools. The first assessment scenario was based on online assignments with antiplagiarism support. Students were obliged to answer several open questions either online or by submitting a scanned handwritten text within a strictly defined time frame. The second scenario was based on online quizzes with different types of closed type questions. A sophisticated system for the preparation of dynamic sets of questions was implemented, using question banks organized into thematic categories, shuffling entries, levels of difficulty and weights, thus rendering a personalized set to each candidate. Students had to answer the personalized set of questions within a strictly defined time frame. In both scenarios 1 and 2 the examination procedure was electronically supervised and monitored by the faculty member. Students were divided in groups of 30 with the presence of a supervisor who also acted as a contact person for answering questions. The third scenario was the online oral exams where an examination committee was appointing online groups of 3-5 students. Students were previously informed for the group they participate and the exact date/time of the oral exam.

### 3 Conclusions

In this crisis situation of emergency remote teaching, National and Kapodistrian University of Athens managed to successfully deliver and assess all courses online. Especially the results of the online exams were encouraging both in terms of reliability / participation and in students' success ratio.

The COVID-19 pandemic offered an opportunity to Higher Education for a broader digital transformation. Teaching will definitely change when the pandemic is over by adopting most of the possibilities brought by digital educational technologies. New services, better infrastructure, more digital content, digital skills and experiences, online tools and new educational scenarios are part of a valuable heritage for the future.

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## 5 Author biographies



**Konstantinos Tsibanis** is a Researcher (PhD candidate) in the field of E-learning Strategies and Technologies. He holds a BSc in Applied Mathematics, an MSc in Informatics and an MSc in Management and Economics of Telecommunication Networks. He works as an IT Manager at the University of Athens (Network Operations Centre) and the Greek Academic Network (GUnet), responsible for the design and development of e-learning services. He is highly experienced in designing e-learning services and successfully manages all phases of e-learning projects from needs analysis and requirements definition to technology selection, implementation, and training. He is the founder and the person responsible for the design, development and support of the Open eClass platform ([www.openeclass.org](http://www.openeclass.org)), an open source LMS on which the majority of the Greek Higher Educational Institutes in Greece base their e-learning services.



**Pantelis Balaouras** holds a PhD in Informatics and Telecommunications and a Diploma on Computer Engineering. He has expertise in designing and deploying multimedia based e-learning and communication services, such as video conferencing, video streaming and on demand services, multimedia digital collections, and IPTV services. He is the technical director of GUnet's Support Center for e-learning and media production ([mc.gunet.gr](http://mc.gunet.gr)) and product engineer for the Open Delos platform ([opendelos.org](http://opendelos.org)). Dr. Balaouras was the project and technical manager for the nationwide project focusing on the development of open courses and supporting services ([project.opencourses.gr](http://project.opencourses.gr)), and NKUA's project for developing 250 open courses ([opencourses.uoa.gr](http://opencourses.uoa.gr)).